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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MOORE, IAN N

ART UNIT	PAPER NUMBER
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2661

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DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/714,246

Applicant(s)

DI BENEDETTO ET AL.

Examiner

Ian N Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5,9 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 6-8,10 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 1 and 6 are objected to because of the following informalities and appropriate correction is required.

- **Claim 1** recites, "...a failure..." in line 13. For consistency purpose, it is suggested to replace with "**a crash or failure**".
- **Claim 6** recites, "...a failure..." in line 4. For consistency and antecedent basis purposes, it is suggested to replace with "**the crash or failure**".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Kicklighter (U.S. 6,005,841).

Regarding Claim 1, Kicklighter'841 discloses an intermediate network device (see FIG. 1, a network switch 2) having at least one line card (see FIG. 1, Line Cards IO 20) defining a plurality of ports for receiving and forwarding messages (see FIG. 1, Line Cards IO receives and transmits the frames) and two or more supervisors (see FIG. 1, Two Packet Engine Cards PRI 38), each supervisor configured to run one

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or more applications to facilitate message handling by the network device (see col. 4, lines 51-55; each PRI 38 card services/performs/runs/executes the packet switching and synchronizing/management/supervisory events/tasks/applications), a method for continuing operation of at least one application despite crashes or failures (see col. 9, lines 31-34; a method of redundancy), the method comprising the steps of:

designating a first supervisor to be an active supervisor (see FIG. 1, PRI 38(A) as active) and a second supervisor to be a standby supervisor (see FIG. 1, PRI 38(S) as standby) for the network device; see col. 6, lines 35-36;

executing the at least one application at the active supervisor (see col. 4, lines 51-55; PRI 38(A) card services/performs/executes the packet switching and synchronizing/management/supervisory events/tasks/applications);

holding the at least one application at the standby supervisor in a dormant state (see col. 2, lines 13-20; note the PRI 38(S) stores/holds an identical operating state/applications while it is placed in a standby/listening mode);

transmitting state information generated during execution of the at least one application from the active supervisor to the standby supervisor (see col.2, lines 24-34; note that the PRI 38(A) communicates/transmits the occurrences of any event to PRI 38(S) while servicing/performing/executing the events/tasks/applications);

storing the state information at the standby supervisor (see FIG. 1, ROM 90, RAM 92; see col. 2, lines 34-39; note that PRI 38(S) experiences the same events/tasks/applications as PRI 38(A) by holding/storing them); and

in response to a failure at the active supervisor, carrying on execution of the at least one application at the standby supervisor based upon at least some of the stored

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state information (see col.2, lines 39-44; note that when PRI 38(A) fails, the PRI 38(S) continues the servicing/performing/executing the events/tasks/applications just prior to failure according to the stored/hold events/tasks/applications.)

Regarding Claim 2, Kicklighter'841 discloses defining a synchronization database having one or more synchronization records at the active supervisor (see FIG. 1, ROM 90, RAM 92; see col. 2, lines 34-39 and col. 6, lines 10-19; note that PRI 38(A) cards stores the configuration/switching/synchronizing/supervisory records/data in the memory/database),

wherein the synchronization records store state information to be transmitted to the standby supervisor (see FIG. 4; see col. 2, lines 34-39; col. 6, lines 49-66; note that each stored configuration/switching/synchronizing/supervisory records/data in the memory/database contains the events/tasks/state information, and they are being download to PRI 38(S) by way of synchronizing).

Regarding Claim 3, Kicklighter'841 discloses updating one or more of the synchronization records in response to an operating change at the at least one application program (see col. 2, lines 24-34; note that the PRI 38(A) communicates/notifies to PRI 38(S) regarding the updates/changes to any configuration/switching/synchronizing/supervisory records/data when updating/changing the operation of events/tasks/state/application (i.e. an operating change due to a receipt of a message/data and call processes)).

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Regarding Claim 4, Kicklighter'841 discloses sending the one or more updated synchronization records to the standby supervisor (see col. 2, lines 24-35; note that configuration/switching/synchronizing/supervisory records/data are sent to the PRI 38(S).)

Regarding Claim 12, Kicklighter'841 discloses an intermediate network device for use in a computer network (see FIG. 1, a network switch 2), the network device comprising:

a first supervisor card (see FIG. 1, PRI 38(A)) in communicating relationship (see FIG. 1, Switching Buses 30) with the one or more line cards (see FIG. 1, Line Cards IO 20);

a second supervisor card (see FIG. 1, PRI 38(S) in communication relations (see FIG. 1, Switching Buses 30) with the first supervisor card;

an application loaded onto the first and second supervisor cards (see col.5, lines 65 to col.6, lines 18; note that the configuration/switching/synchronizing/management/supervisory application is download/stored on each PRI card), the application configured to define and manipulate a plurality of state variables (see col. 4, lines 51-55; the configuration/switching/synchronizing/management/supervisory application defines/performs/runs/executes/manipulates the plurality of events/tasks/states occurrences (i.e. state variables)); and

a high availability entity disposed on both the first and second supervisor cards, the high availability entities comprising:

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an event mechanism for notifying a selected one of the first or second supervisor cards of changes to the application's state variables (see col. 2, lines 24-34; note that the PRI 38(A) has a mechanism to communicates/notifies to PRI 38(S) regarding the updates/changes to any event/task/state occurrences); and

a database mechanism for storing the state variables at the first and second supervisor cards (see FIG. 1, ROM 90, RAM 92; see col. 2, lines 34-39; note that both PRI 38 cards experiences the same event/task/state occurrences by holding/storing them in their respective memory/database mechanism).

Regarding Claim 13, Kicklighter'841 discloses the first supervisor card is designated as an active supervisor card (see FIG. 1, PRI 38(A) as active) and the second supervisor card is designated as a standby supervisor card (see FIG. 1, PRI 38(S) as standby) for the network device; see col. 6, lines 35-36;

the application is allowed to run on the active supervisor card but not on the standby supervisor card (see col. 2, lines 13-20; note the PRI 38(S) is placed in a standby/listening mode, thus, it does not execute any task/applications);

in response to a crash or failure of the active supervisor card, the application carries on its execution from the standby supervisor card utilizing at least some of the state variables stored at the database mechanism of the standby supervisor card (see col. 2, lines 39-44; note that when PRI 38(A) fails, the PRI 38(S) continues the servicing/performing/executing the events/tasks/applications just prior to failure according to the stored/hold events/tasks/applications.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Kicklighter'841 in view of well-established teaching in art.

Regarding Claim 5, Kicklighter'841 discloses instructing the at least one line card to change operating condition (see FIG. 2; PRI 38 card commands/instructs the line card IO (via Nodal Switch or CPU/matrix 44) to update/change the switching/management/supervisory events/tasks/conditions/states (i.e. change operating condition); see col. 4, lines 51-67),

sending to the at least one line card with the instruction (see FIG. 1; the commands/instructions must be send to the line card (i.e. command to transmit/receive frames; see col. 4, lines 6-24); and

storing the at the at least one line card (see FIG. 1, Line Card IO 20; note that each line card is the IO (Input and output) module, thus, it is clear that it must have a memory/caching mechanism to store the command/instruction and performs accordingly.)

Kicklighter'841 does not explicitly disclose generating a sequence number for use in instructing.

However, the above-mentioned claimed limitations are taught by well-established teaching in art. In particular, well-established teaching in art teaches generating a sequence number for use in instructing. Note that it is well known in the art that when a command/instruction is generated by the processor/controller, it must have a sequence number, timer, time-stamp, or clock cycle that identifies a particular instruction/command along with the contents of the instruction/command so that the recipient can identify, store, and performs tasks synchronously. In particular, a sequence number with the command/instruction is sent to Kicklighter'841's line card IO (via Nodal Switch or CPU/matrix 44). Moreover, Kicklighter'841's line card IO can store/queue the sequence number with the command/instruction to execute/perform accordingly.

In view of this, having the system of Kicklighter'841 and then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kicklighter'841, by providing sequencing mechanism of utilizing the sequence number to identify the command/instruction, as taught by well established teaching in the art. The motivation to combine is to obtain the advantages/benefits taught by well established teaching in the art that such modification would increase the recipient capability to identify, store, and performs commanded/instructed tasks synchronously.

Regarding Claim 9, Kicklighter'841 discloses updating/synchronizing the state information between the active and standby supervisors during the system

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initialization and periodically when any change in event occurs as disclosed above in claim 1. In particular, Kicklighter'841 discloses determining the validity of the state information stored at the supervisor (see col. 5, lines 59-67; note that the validity of configuration state information stored at PRI 38 is determined by utilizing QUERY BOARD INFORMATION message); and

performing the at least one application from utilizing state information determined to be valid in its execution (see col. 5, lines 59 to col. 6, lines 5; performing the download process after determining that QUERY BOARD INFORMATION ACKNOWLEDGEMENT message is received and there is no or insufficient configuration information in PRI 38 (i.e. the state information determined to be valid in its execution)).

Kicklighter'841 does not explicitly disclose determining the validity of the state information stored at the standby supervisor following a crash or failure of the active supervisor; and blocking the at least one application from utilizing state information determined to be invalid in its execution.

However, the above-mentioned claimed limitations are taught by well-established teaching in art. In particular, well-established teaching in art teaches determining the validity of the state information stored at the standby supervisor following a crash or failure of the active supervisor (note that Kicklighter'841 teaches validating the state information stored during the system initialization and periodically every time there is a state/event change. Thus, it is obvious that one must certainly validate the stored state/event information at the PRI 38 (S) after PRI 38(A) fails to ensure the consistency again);

blocking the at least one application from utilizing state information determined to be invalid in its execution (note that Kicklighter'841 teaches performing the executing tasks after determining that the state is valid to process. Thus, it is obvious that one must block/stop the executing/performing application/events after determining that the state is invalid after the switchover.)

In view of this, having the system of Kicklighter'841 and then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kicklighter'841, by providing a mechanism to validate the state information and block/stop processing/executing of any invalid information after a switchover, as taught by well established teaching in the art. The motivation to combine is to obtain the advantages/benefits taught by well-established teaching in the art that such modification would increase reliability and minimize the inconsistent state information after switchover.

Regarding Claim 14, Kicklighter'841 discloses at least one line card (see FIG. 1, Line Cards IO 20) defining a plurality of ports for forwarding messages (see FIG. 1, Line Cards IO receives and transmits the frames) across the computer network (see col. 2, lines 5-7; note that telecommunications system/network utilizes computing devices and their functionality, thus, it is the computer network), the at least one line card in communicating relationship with the first and second supervisor cards and configured to receive and state information from the application (see FIG. 1, Line cards communicate with PRI 38(A) and PRI(B) via buses and via Nodal

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Switch or CPU/matrix 44), wherein the high availability entities at the first and second supervisor cards further comprise:

the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card (see FIG. 2; PRI 38 card commands/instructs the line card IO (via Nodal Switch or CPU/matrix 44) to update/change the switching/ management/supervisory events/tasks/conditions/states; see col. 4, lines 51-67. Each line card is the IO (Input and output) module, and it must have a memory/caching mechanism to maintain/store the command/instruction of the state information of each port. Thus, it is clear that plurality of events/tasks/states occurrences (i.e. state variables) in both PRI 38 cards are consistent with each line card's call processing or framing states/tasks information (i.e. port states).)

Kicklighter'841 does not explicitly disclose a sequence mechanism.

However, the above-mentioned claimed limitations are taught by well-established teaching in art. In particular, well-established teaching in art teaches a sequence mechanism. Note that it is well known in the art that when a command/instruction is generated by the processor/controller, it must have a sequence number, timer, time-stamp, or clock cycle that identifies a particular instruction/command along with the contents of the instruction/command so that the recipient can identify, store, and performs tasks synchronously. In particular, a sequence number with the command/instruction is sent to Kicklighter'841's line card IO (via Nodal Switch or CPU/matrix 44). Moreover, Kicklighter'841's line card IO

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can store/queue the sequence number with the command/instruction to execute/perform synchronously.

In view of this, having the system of Kicklighter'841 and then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kicklighter'841, by providing sequencing mechanism of utilizing the sequence number to identify the state information, as taught by well established teaching in the art. The motivation to combine is to obtain the advantages/benefits taught by well established teaching in the art that such modification would ensure more reliable increase the recipient capability to identify, store, and performs commanded/instructed tasks synchronously.

Allowable Subject Matter

4. Claims 6,7,8,10,11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

INM
3/19/04


RICKY NGO
PRIMARY EXAMINER